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Search for top squark pair production in pp collisions at √s=13 TeV using single lepton events (Article)

The CMS collaboration, Sirunyan, A.M.[a], Tumasyan, A.[a], Adam, W.[b], Ambrogi, F.[b], Asilar, E.[b], Bergauer, T.[b], Brandstetter, J.[b], Brondolin, E.[b], Dragicevic, M.[b], Erö, J.[b], Flechl, M.[b], Friedl, M.[b], Frühwirth, R.[bgq], Ghete, V.M.[b], Grossmann, J.[b], Hrubec, J.[b], Jeitler, M.[bgq], König, A.[b], Krammer, N.[b], Krätschmer, I.[b],

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Abstract

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A search for top squark pair production in pp collisions at s=13 TeV is performed using events with a single isolated electron or muon, jets, and a large transverse momentum imbalance. The results are based on data collected in 2016 with the CMS detector at the LHC, corresponding to an integrated luminosity of 35.9 fb^{-1}. No significant excess of events is observed above the expectation from standard model processes. Exclusion limits are set in the context of supersymmetric models of pair production of top squarks that decay either to a top quark and a neutralino or to a bottom quark and a chargino. Depending on the details of the model, we exclude top squarks with masses as high as 1120 GeV. Detailed information is also provided to facilitate theoretical interpretations in other scenarios of physics beyond the standard model. © 2017, The Author(s).

Author keywords

Beyond Standard Model Hadron-Hadron scattering (experiments) Top physics

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(2018) Journal of High Energy Physics

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Baer, H. , Barger, V. , Gainer, J.S.
(2018) Physical Review D

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(2018) Physical Review D

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(2018) Physical Review D

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(2016) Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics

Search for supersymmetry in the multijet and missing transverse momentum final state in pp collisions at 13 TeV

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References (50)

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1 Ramond, P.
Dual theory for free fermions
(1971) *Physical Review D*, 3 (10), pp. 2415-2418. Cited 895 times.
doi: 10.1103/PhysRevD.3.2415
View at Publisher

2 Golfand, Y.A., Likhtman, E.P.
Extension of the algebra of Poincaré group generators and violation of p invariance
(1971) *JETP Lett.*, 13, p. 323. Cited 615 times.
INSPIRE

3 Neveu, A., Schwarz, J.H.
Factorizable dual model of pions
(1971) *Nuclear Physics, Section B*, 31 (1), pp. 86-112. Cited 865 times.
doi: 10.1016/0550-3213(71)90448-2
View at Publisher

4 Volkov, D.V., Akulov, V.P.
Possible universal neutrino interaction
(1972) *JETP Lett.*, 16, p. 438. Cited 271 times.
INSPIRE

5 Wess, J., Zumino, B.
A lagrangian model invariant under supergauge transformations
(1974) *Physics Letters B*, 49 (1), pp. 52-54. Cited 818 times.
doi: 10.1016/0370-2693(74)90578-4
View at Publisher

6 Wess, J., Zumino, B.
Supergauge transformations in four dimensions
(1974) *Nuclear Physics, Section B*, 70 (1), pp. 39-50. Cited 1609 times.
doi: 10.1016/0550-3213(74)90355-1
View at Publisher

7 Fayet, P.
Supergauge invariant extension of the Higgs mechanism and a model for the electron and its neutrino
(1975) *Nuclear Physics, Section B*, 90 (C), pp. 104-124. Cited 646 times.
doi: 10.1016/0550-3213(75)90636-7
View at Publisher

8 Nilles, H.P.
Supersymmetry, supergravity and particle physics
(1984) *Physics Reports*, 110 (1-2), pp. 1-162. Cited 3526 times.
doi: 10.1016/0370-1573(84)90008-5
View at Publisher

9 Observation of a new particle in the search for the standard model Higgs boson with the ATLAS detector at the LHC
(2015) *Phys. Lett. B*
716 1

10 Chatrchyan, S., Khachatryan, V., Sirunyan, A.M., Tumasyan, A., Adam, W., Aguilo, E., Bergauer, T., (...), Wenman, D.

Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC

(2012) *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*, 716 (1), pp. 30-61. Cited 4167 times.
http://www.sciencedirect.com/science/journal/03702693
doi: 10.1016/j.physletb.2012.08.021

View at Publisher

11 Chatrchyan, S., Khachatryan, V., Sirunyan, A.M., Tumasyan, A., Adam, W., Bergauer, T., Dragicevic, M., (...), Swanson, J.

Combined results of searches for the standard model Higgs boson in pp collisions at s=7 TeV

(2012) *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics*, 710 (1), pp. 26-48. Cited 415 times.
doi: 10.1016/j.physletb.2012.02.064

View at Publisher

12 Papucci, M., Ruderman, J.T., Weiler, A.

Natural SUSY endures

(2012) *Journal of High Energy Physics*, 2012 (9), art. no. 035. Cited 273 times.
doi: 10.1007/JHEP09(2012)035

View at Publisher

13 Barbieri, R., Pappadopulo, D.

S-particles at their naturalness limits

(2009) *Journal of High Energy Physics*, 2009 (10), art. no. 061. Cited 47 times.
doi: 10.1088/1126-6708/2009/10/061

View at Publisher

14 Dimopoulos, S., Giudice, G.F.

Naturalness constraints in supersymmetric theories with non-universal soft terms

(1995) *Physics Letters B*, 357 (4), pp. 573-578. Cited 449 times.
doi: 10.1016/0370-2693(95)00961-J

View at Publisher

15 Aaboud, M., Aad, G., Abbott, B., Abdallah, J., Abdinov, O., Abeloos, B., Aben, R., (...), Zwalinski, L.

Search for top squarks in final states with one isolated lepton, jets, and missing transverse momentum in s =13 TeV pp collisions with the ATLAS detector

(2016) *Physical Review D*, 94 (5), art. no. 052009. Cited 23 times.
http://harvest.aps.org/bagit/articles/10.1103/PhysRevD.94.052009/apsxml
doi: 10.1103/PhysRevD.94.052009

View at Publisher

16 Sirunyan, A.M., Tumasyan, A., Adam, W., Asilar, E., Bergauer, T., Brandstetter, J., Brondolin, E., (...), Woods, N.

Searches for pair production of third-generation squarks in √s=13TeV pp collisions

(2017) *European Physical Journal C*, 77 (5), art. no. 327. Cited 8 times.
http://link.springer-ny.com/link/service/journals/10052/index.htm
doi: 10.1140/epjc/s10052-017-4853-2

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17 Khachatryan, V., Sirunyan, A.M., Tumasyan, A., Adam, W., Asilar, E., Bergauer, T., Brandstetter, J., (...), Woods, N.

Search for supersymmetry in the all-hadronic final state using top quark tagging in pp collisions at s =13 TeV

(2017) *Physical Review D*, 96 (1), art. no. 012004. Cited 5 times.
http://harvest.aps.org/bagit/articles/10.1103/PhysRevD.96.012004/apsxml
doi: 10.1103/PhysRevD.96.012004

View at Publisher

18 (2008) *The CMS experiment at the CERN LHC*. Cited 88 times.
JINST 3 S08004

19 *MARMOSET: the path from LHC data to the new standard model via on-shell effective theories*. Cited 3 times.
N. Arkani-Hamed et al

20 Alwall, J., Schuster, P.C., Toro, N.

Simplified models for a first characterization of new physics at the LHC

(2009) *Physical Review D - Particles, Fields, Gravitation and Cosmology*, 79 (7), art. no. 075020. Cited 183 times.
http://oai.aps.org/oai?verb=GetRecord&Identifier=oai:aps.org:PhysRevD.79.075020&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevD.79.075020

View at Publisher

21 Alwall, J., Le, M.-P., Lisanti, M., Wacker, J.G.

Model-independent jets plus missing energy searches

(2009) *Physical Review D - Particles, Fields, Gravitation and Cosmology*, 79 (1), art. no. 015005. Cited 89 times.
http://oai.aps.org/oai?verb=GetRecord&Identifier=oai:aps.org:PhysRevD.79.015005&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevD.79.015005

View at Publisher

22 Alves, D., Arkani-Hamed, N., Arora, S., Bai, Y., Baumgart, M., Berger, J., Buckley, M., (...), Zurek, K.

Simplified models for LHC new physics searches

(2012) *Journal of Physics G: Nuclear and Particle Physics*, 39 (10), art. no. 105005. Cited 161 times.
http://iopscience.iop.org/0954-3899/39/10/105005/pdf/0954-3899_39_10_105005.pdf
doi: 10.1088/0954-3899/39/10/105005

View at Publisher

23 Alwall, J., Frederix, R., Frixione, S., Hirschi, V., Maltoni, F., Mattelaer, O., Shao, H.-S., (...), Zaro, M.

The automated computation of tree-level and next-to-leading order differential cross sections, and their matching to parton shower simulations

(2014) *Journal of High Energy Physics*, 2014 (7), art. no. 079. Cited 1458 times.
http://link.springer.com/journal/13130
doi: 10.1007/JHEP07(2014)079

View at Publisher

24 Alwall, J., Höche, S., Krauss, F., Lavesson, N., Lönnblad, L., Maltoni, F., Mangano, M.L., (...), Worek, M.

Comparative study of various algorithms for the merging of parton showers and matrix elements in hadronic collisions

(2008) *European Physical Journal C*, 53 (3), pp. 473-500. Cited 371 times.
doi: 10.1140/epjc/s10052-007-0490-5

View at Publisher

25 Ball, R.D., Bertone, V., Carrazza, S., Deans, C.S., Del Debbio, L., Forte, S., Guffanti, A., (...), Ubiali, M.

Parton distributions for the LHC run II

(2015) *Journal of High Energy Physics*, 2015 (4), art. no. 40, pp. 1-148. Cited 242 times.
http://link.springer.com/journal/13130
doi: 10.1007/JHEP04(2015)040

View at Publisher

26 Nason, P.

A new method for combining NLO QCD with shower Monte Carlo algorithms

(2004) *Journal of High Energy Physics*, 8 (11), pp. 1097-1124. Cited 681 times.

27 Frixione, S., Nason, P., Oleari, C.

Matching NLO QCD computations with parton shower simulations: The POWHEG method

(2007) *Journal of High Energy Physics*, 2007 (11), art. no. 070. Cited 981 times.
doi: 10.1088/1126-6708/2007/11/070

View at Publisher

28 Alioli, S., Nason, P., Oleari, C., Re, E.

A general framework for implementing NLO calculations in shower Monte Carlo programs: The POWHEG BOX

(2010) *Journal of High Energy Physics*, 2010 (6), art. no. 043. Cited 834 times.
doi: 10.1007/JHEP06(2010)043

View at Publisher

29 Re, E.

Single-top Wt-channel production matched with parton showers using the POWHEG method

(2011) *European Physical Journal C*, 71 (2). Cited 148 times.
http://link.springer-ny.com/link/service/journals/10052/index.htm
doi: 10.1140/epjc/s10052-011-1547-z

View at Publisher

30 Frederix, R., Frixione, S.
Merging meets matching in MC@NLO

(2012) *Journal of High Energy Physics*, 2012 (12), art. no. 061. Cited 123 times.
doi: 10.1007/JHEP12(2012)061

View at Publisher

31 Sjöstrand, T., Ask, S., Christiansen, J.R., Corke, R., Desai, N., Ilten, P., Mrenna, S., (...), Skands, P.Z.
An introduction to PYTHIA 8.2

(2015) *Computer Physics Communications*, 191 (1), pp. 159-177. Cited 385 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/706710/description#description
doi: 10.1016/j.cpc.2015.01.024

View at Publisher

32 Agostinelli, S., Allison, J., Amako, K., Apostolakis, J., Araujo, H., Arce, P., Asai, M., (...), Zschiesche, D.
GEANT4 - A simulation toolkit

(2003) *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 506 (3), pp. 250-303. Cited 9917 times.
doi: 10.1016/S0168-9002(03)01368-8

View at Publisher

33 Abdullin, S., Azzi, P., Beaudette, F., Janot, P., Perrotta, A.
The fast simulation of the CMS detector at LHC

(2011) *Journal of Physics: Conference Series*, 331 (PART 3), art. no. 32049. Cited 56 times.
http://www.iop.org/EJ/journal/conf
doi: 10.1088/1742-6596/331/3/032049

View at Publisher

34 *Particle-flow reconstruction and global event description with the CMS detector*. Cited 17 times.

35 Cacciari, M., Salam, G.P., Soyez, G.
The anti-k_t jet clustering algorithm

(2008) *Journal of High Energy Physics*, 2008 (4), art. no. 063. Cited 2312 times.
doi: 10.1088/1126-6708/2008/04/063

View at Publisher

36 Cacciari, M., Salam, G.P., Soyez, G.
FastJet user manual
(2012) *Eur. Phys. J.*, 100, p. 1896. Cited 490 times.
arXiv:1111.6097] [INSPIRE

37 *Performance of electron reconstruction and selection with the CMS detector in proton-proton collisions at √s=8TeV, 2015 JINST*. Cited 2 times.

38 *Performance of CMS muon reconstruction in pp collision events at √s=7 TeV, 2012 JINST 7 P10002*. Cited 7 times.

39 (2017) *Jet energy scale and resolution in the CMS experiment in pp collisions at 8 TeV*. Cited 3 times.
JINST 12 P02014

40 (2013) *Identification of b-quark jets with the CMS experiment, 2013 JINST 8 P04013*

41 Identification of b quark jets at the CMS Experiment in the LHC Run 2
(2015) *CMS-PAS-BTV-15-001*
CMS collaboration

42 (2011) *Missing transverse energy performance of the CMS detector*. Cited 6 times.
JINST 6 P09001

43 Graesser, M.L., Shelton, J.
Hunting mixed top squark decays

(2013) *Physical Review Letters*, 111 (12), art. no. 121802. Cited 34 times.
http://oai.aps.org/filefetch?identifier=10.1103/PhysRevLett.111.121802&component=fulltext&description=markup&format=xml
doi: 10.1103/PhysRevLett.111.121802

View at Publisher

44 Junk, T.
Confidence level computation for combining searches with small statistics

(1999) *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 434 (2), pp. 435-443. Cited 766 times.
doi: 10.1016/S0168-9002(99)00498-2

View at Publisher

45 Read, A.L.
Presentation of search results: The CL_s technique

(2002) *Journal of Physics G: Nuclear and Particle Physics*, 28 (10), pp. 2693-2704. Cited 1063 times.
doi: 10.1088/0954-3899/28/10/313

View at Publisher

46 Cowan, G., Cranmer, K., Gross, E., Vitells, O.
Asymptotic formulae for likelihood-based tests of new physics

(2011) *European Physical Journal C*, 71 (2). Cited 427 times.
http://link.springer-ny.com/link/service/journals/10052/index.htm
doi: 10.1140/epjc/s10052-011-1554-0

View at Publisher

47 Cowan, G., Cranmer, K., Gross, E., Vitells, O.
Asymptotic formulae for likelihood-based tests of new physics
(2013) *Eur. Phys. J. C*, 73, p. 2501. Cited 151 times.
[arXiv:1007.1727] [INSPIRE]

48 Procedure for the LHC Higgs boson search combination in Summer 2011
(2011) *ATL-PHYS-PUB*, p. 2011.
ATLAS and CMS collaborations, LHC Higgs Combination Group

49 Borschensky, C.
Squark and gluino production cross sections in pp collisions at s=13, 14, 33 and 100 TeV
(2014) *Eur. Phys. J.*, 100, p. 3174. Cited 32 times.
arXiv:1407.5066] [INSPIRE

50 Simplified likelihood for the re-interpretation of public CMS results
(2017) *CERN-CMS-NOTE-2017-001*
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